THE DIGITAL MIGRATION: THE FUTURE IS UPON US

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After years of waiting and policy angst, the great digital migration is now upon us. Across the land, Americans see the first firm steps down a road that will lead to unprecedented consumer welfare, efficiency gains, and competitive choice. In turn, policy makers must answer a fundamental question: can we stand our own success?

For years telecommunications pundits have talked about convergence and the transformation of the technological landscape: traditional telephone companies offering video; wireless services offering broadband; and media companies offering advanced interactive data services. In the eight years following the passage of the Telecommunications Act of 1996, those visions rarely became reality. The burst telecom bubble was filled with business plans premised on the idea of "one stop shopping." From video dial tone to fixed wireless to satellite data networks, regulators have spent countless hours preparing regulatory regimes for services that never came. Yet today, throughout our national infrastructure, a new era of facilities-based competition between and among platforms seems to be on the horizon. For years, telecommunications policy makers have longed for this day. As it approaches, one thing is clear—it is dramatic and transformative.

The transformation threatens decades of telecommunication law and regulation built on analog foundations at the state and federal levels. Government used to regulate by transportation medium. Analog voice regulation was based on copper wire, media was regulated by its broadcast spectrum, while cable regulation rested on franchising the coaxial cable provider. In each case, government regulated based on a fundamental expectation that a single monopoly provider would deliver the service. This model has shown signs of increasing strain over the past five years. The stress appears close to dramatically breaking apart the old analog regulatory regime.

A new digital world is upon us. It means data, voice, and video will be provided over a variety of facilities-based platforms competing with one another. Voice already has made strong advances towards this converged world, with Voice over Internet Protocol ("VoIP") perhaps the final leg in the journey. Data services now rely on DSL and cable, but increasingly new platforms—such as WiFi, licensed wireless, satellite, and even broadband over power line—are in the queue. The video market is the least competitive, although Direct Broadcast Satellite ("DBS") continues to gain market share and the increasing widening of the data pipe to Americans' homes may soon bring all the benefits of the digital migration to the video market as well. The digital migration has begun, and will continue to, fundamentally change the way we communicate and use technologies—and it must change the way we regulate.

THE DIGITAL MIGRATION DEFINED

In the analog narrowband world, the regulatory framework was relatively simple: a copper line provided voice service; a coaxial cable provided

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cable service; and spectrum delivered television and radio broadcasts. Each platform provided a distinct application, with little—if any—commingling. Regulation was similarly straightforward. For example, government regulated a copper architecture for voice services. When government wanted 911 services for voice, it examined the copper wire infrastructure and decided how to impose 911. When government wanted to ensure every American access to voice services, it subsidized the construction of a vast wireline copper voice network. Government regulated and supported services by sanctioning a specific monopoly infrastructure.[1]

The digital world is far more complex in its relationship between infrastructure and services. Ultimately, a variety of platforms (including cable, DSL, fiber-to-the-home, power lines, licensed wireless, WiFi, and laser) will provide one, if not all three, of the traditionally regulated applications—voice, video, and data. After the migration, service and infrastructure providers are forced to compete and innovate in hopes of surviving and increasing market share. As a result, consumers benefit from greater choice and personalization of technology. The economy and the industry grow through increased efficiency, investment, and job creation. New digital technologies also enable vast new opportunities across the sweep of American life for education, health care, small business development, and homeland security.

THE WIRELESS EXPERIENCE

Government's challenge is to expedite the migration. In developing effective regulatory policies, the wireless voice experience is informative. Over the past twenty years of wireless voice regulation, government has successfully implemented the first-ever regulatory regime premised on competition rather than monopoly. Thus regulation has been largely built on actual marketplace necessity rather than a preconceived, prophylactic monopoly regulation. This regime has fostered a successful transition from a nascent niche service to a consumer success story: 160 million users; vigorous competition from six national players; dozens of regional providers; and over 14% of consumers now using their wireless phone as their primary phone.[2] All this has been achieved even as prices continue to fall and minutes of use continue to rise.[3] Since the digital migration hopes ultimately to achieve the same goals of the wireless voice market (vigorous competition, innovation, and lower prices), a similar regulatory path may well be useful.

Wireless voice regulation may well have grown from low expectations rather than regulatory foresight. Originally, government granted two cellular licenses in each market to deliver what were considered "niche" voice applications; initial estimates were that the wireless market would "top out" at about 900,000 subscribers by the year 2000.[4] After this initial limited licensing, there was a period of limited innovation and industry competition. During this time, there was substantial pressure to begin subjecting the new duopoly industry to legacy regulation from the old world of monopoly wireline voice.[5] However, with the government's auction of six new PCS licenses in each market starting in the mid-1990's, additional competition began and calls for regulation lessened. Together the new providers tried a variety of methods to differentiate themselves and gain market share. They spurred innovation, reduced prices, expanded coverage, and diversified service offerings. Among these innovations was the birth of the bucket of minutes billing regime of AT&T Wireless,[6] which many believe was the first blow in

[1] For decades, this model worked well and helped create the premier national communications infrastructure in the world. It is not that the policy was flawed for that time, only those times have changed.

[2] *See* Press Release, Cellular Telecomm. & Internet Ass'n, Wireless Industry Posts Winning Numbers, *at* http://www.ctia.org/news_media/press/body.cfm?record_id=1386 (Mar. 22, 2004); Eric Gwinn, *Getting Wired In To Go Wireless*, CHI. TRIB., *at* http://www.chicagotribune.com/technology/reviews/chi-0403250089mar25,1,1937337.story?coll=chi-technology-utl (Mar.25, 2004).

[3] See Implementation of Section 6002(b) of the Omnibus Budget Reconciliation Act of 1993, Annual Report and Analysis of Competitive Market Conditions With Respect to Commercial Mobile Services, *Eighth Report*, 18 FCC Rcd. 14783, 14816, 14827 (2003).

[4] *See* JAMES MURRAY, WIRELESS NATION: THE FRENZIED LAUNCH OF THE CELLULAR REVOLUTION IN AMERICA 26 (Persus Publishing 2001).

[5] *See* Implementation of Section 6002(b) of the Omnibus Budget Reconciliation Act of 1993, Annual Report and Analysis of Competitive Market Conditions with Respect to Commercial Mobil Services, *Second Report*, 12 FCC Rcd. 11266, 11273 (1997).

[6] *See* Sue Marek, *Buckets of Minutes Take Financial Toll*, WIRELESS WEEK, Jan. 21, 2002, *available at* http://www.wirelessweek.com/article/CA192064?ticker=SBC&type=stockwatch (explaining that when AT&T Wireless introduced its

the ultimate death of distance and the corresponding end of a distinct long distance market for voice communications. These wireless market developments took place against a backdrop of general regulatory restraint—forbearance of rate regulations, tariff requirements, and a general reluctance to extend legacy wireline regulation onto this robust competitor.

Government faces regulatory and legal challenges across the digital migration to adapt analog regulation to an increasingly digital world. The voice market is the most advanced and therefore places the most pressure on the old regulatory regime. In most markets, American consumers can today choose from more than a half dozen voice providers across platforms. This liberation of the voice application from any one platform is creating tremendous value for American consumers. But how will regulators respond to the opportunities on the digital migration road? Will they try to constrain innovation with yesterday's regulation or will they follow the wireless voice example that rides the wave of innovation and assumes that true competition and the marketplace can and will deliver for American consumers?

CHALLENGES TO THE DIGITAL MIGRATION

Although the digital migration is largely an inevitable consequence of technological change, policy makers are still capable of retarding its progress or hastening its arrival. There will be a number of challenges in effectively navigating this policy storm. Three key challenges are: (1) increased risk and uncertainty; (2) the incumbent dilemma; and (3) consumer confusion and retrenchment.[7]

Risk & Uncertainty

The path of the digital migration requires telecommunications companies to take new risks and will require customers to be more tolerant of those risks. Communications companies have and will continue to fail as the marketplace sorts through the various competitors. Consumers may be forced to switch providers or lose some services. Where once investors could confidently point to a predictable rate-of-return regime, the marketplace will now be far more volatile. This volatility may tempt policy makers and some incumbents to press government to intervene to restore protections afforded a monopoly.

The regulators' struggle to adapt existing rules to a new market also creates uncertainty. In many cases, the old regulatory classifications are extremely difficult to apply to new technologies. New rules will be inevitably challenged in court and potentially reversed as agencies struggle to craft "new law." For example, in the recent *Brand X* case, the United States Court of Appeals for the Ninth Circuit rejected the FCC's effort to classify cable broadband services as a less regulated Title I information service.[8] Examples like *Brand X* underscore how regulators' efforts to adapt old law to new technologies may further exacerbate the risk and uncertainty already created by the migration.

The Incumbent Dilemma

The digital migration also creates pressure on incumbents who may not fare as well in the new highly competitive world. These incumbents will inevitably struggle with how to compete with or co-opt new technologies that offer substitutable services. In the analog world, most service providers had a population that they exclusively served for a specific application. For example, local exchange carriers exclusively controlled the local voice market. Technological change disrupts this model and generally provides entrepreneurs with far lower barriers to entry, so that incumbents must evaluate when and how to shift their business models and adapt their regulatory strategies to maximize the bottom line during the period of uncertainty. This process is happening today, for example, as the regional Bell operating companies look to offer VoIP and wireless voice services that cut into their core copper voice business. However, some incumbents may be reluctant to embrace technological change that may undercut their core businesses. In the absence of embrac-

bucket of minutes regime in 1998 many other carriers followed suit).

[7] There are clearly many other challenges as well. I focus here on three general categories, but general economic trends, capital availability, political anxiety, and other factors also play a role.

[8] *See Brand X Internet Services v. FCC*, 345 F.3d 1120, 1132 (9th Cir. 2003). The court found it was bound by a prior decision that held cable modem services contained "telecommunications services." *Id.*

ing new technologies, some incumbents may try to block new entrants through legislative, regulatory, or legal action. Regulators must not allow incumbents to use the regulatory regime to retard new entrants who will ultimately advance the public interest and should seek policies that encourage incumbents to move to new technologies.

Consumer Confusion and Retrenchment

Consumer acceptance is critical for the migration's success. Such acceptance is not a given. In many ways, monopoly and frozen technologies are far easier for consumers to manage than a vigorous competitive market with a wide range of choices and technologies. In order to trust in the market and the long-term goals of the migration, consumers must be able to see and understand what the migration will mean to them in tangible terms such as lower prices, new services, and increased flexibility. Absent such evidence, consumers will yearn for a more tightly regulated and predictable industry. So, for example, in the early days of cellular duopoly with little innovation and high prices, there was significant consumer interest in imposing old monopoly style price regulation. A decade later when the consumer benefits of wireless competition are widely acknowledged, those calls are far more limited. Many wireless voice consumers have learned to use the market to their advantage in gaining lower prices, greater innovation, and lots of choice. The challenge for policy makers is to manage this same evolution for all voice, data, and video service providers in a way that highlights advantages to consumers and thus advances the migration.

HOW FAR WE HAVE COME

Despite these obstacles, everyday headlines illustrate how far we have come in the digital migration. Multiple platforms are now offering voice, video, and data applications in new ways.

Voice

New voice applications best demonstrate the digital migration's true value and significant success so far. Multiple platforms are currently providing some form of voice application, including wireline, wireless, VoIP, and satellite. Indeed federal policy has led most consumers to have more than eight choices for their facilities-based voice provider (six national wireless carriers, an ILEC, CLECs, VoIP providers, cable telephone providers, etc.).

The Commission continues to drive the country's regulatory policies towards increased consumer choice. In February 2004, the FCC released a *Notice of Proposed Rulemaking* for IP-enabled services, including VoIP services, strongly suggesting the agency will only pursue a narrow range of regulations for this new service.[9] The Commission's recent *Pulver.com Order* further emphasized the FCC's long-standing policy of keeping consumer Internet services free from burdensome economic regulation.[10] The FCC declared Pulver's Free World Dial-up service to be a minimally regulated information service that is subject to exclusive federal jurisdiction.

Video

Multichannel video platforms are gearing up to be another battleground in the migration. Today two platforms largely dominate this market: cable and DBS. There are approximately 20 million DBS subscribers today—up from just over 7 million in 1998.[11] The two dominant DBS providers—Echostar and DirectTV—continue to make strong progress against cable. Soon the Commission will auction additional DBS slots and explore ways of increasing the number of DBS satellites in orbit by narrowing the spacing between satellites. But the FCC also continues to develop policies to encourage additional video competition through other platforms. For example, the Commission

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[9] IP-Enabled Services, *Notice of Proposed Rulemaking*, 19 FCC Rcd. 4863 (2004).

[10] Petition for Declaratory Ruling that Pulver.com's Free World Dialup is Neither Telecommunications Nor a Telecommunications Service, *Memorandum Opinion and Order*, 19 FCC Rcd. 3307 (2004).

[11] *See* Annual Assessment of the Status of Competition in the Market for the Delivery of Video Programming, *Tenth Annual Report*, 19 FCC Rcd. 1606, 1718 (2004).

recently auctioned multichannel video distribution and data service ("MVDDS") licenses that may be used to provide video competition.[12] In addition, with a wide enough pipe, every broadband connection has the potential to offer video as a cable alternative. As these and other new competitive platforms emerge, debates will no doubt begin over extending the current video rules and regulations (*e.g.*, must carry, the emergency alert system, and even indecency) to these alternative video platforms.

Data

The American data market is becoming increasingly competitive across a variety of platforms. Data is perhaps the most essential of the services in the migration because ultimately it is THE service. Voice and video will soon only be bytes on a massive broadband pipe. Thus, if we make the digital data migration—essentially all consumer services will have the benefits of robust facilities-based competition.

A recent Pew Internet & American Life Project survey finds that 55% of adult Internet users have broadband at home or work.[13] According to the Telecommunications Industry Association's 2004 Telecommunications Market Review and Forecast, cable modem subscriptions will increase from 12.8 million in 2003 to over 18.5 million in 2005; DSL subscriptions will increase from 7.8 million to over 13.4 million; fixed wireless subscriptions will increase from 368,000 to just over 1 million; fiber to the home subscriptions from 125,000 to 776,000; and satellite subscriptions from 349,000 to over 1 million.[14] Gartner predicts that the number of worldwide WiFi users will triple in 2004 to about 30 million from 2003's 9.3 million with over 132,000 worldwide wireless hot spots.[15] TIA predicts that by 2007, United States high-speed subscribers will total 47 million, an increase from 2003's 21.6 million.[16] The data migration across technologies is well underway.

Nonetheless, the FCC continues to design policies to encourage other platforms in the marketplace. Recently, the Commission adopted a *Notice of Proposed Rulemaking* for broadband over power lines to determine whether power lines are an alternative pipe to the home.[17] Other new data technologies are already hitting the shelves. Verizon recently introduced its EvDO technology that provides wireless broadband-speed service.[18] Other platforms such as fixed wireless, satellite, and laser may also successfully enter the market. The Commission does not and cannot expect each technology to succeed, but should continue to develop policies that allow each technology a chance to compete.

CONCLUSION

The digital migration is a complex and delicate process, yet it is also as resilient and inevitable as the technology that drives it. The last five years have seen a remarkable increase in the pace of the migration and there are growing signs that we are nearing an inflection point. Services are increasingly liberated from their analog platforms and pressure continues to build on the traditional regulatory regime. In turn, consumers are beginning to enjoy an unprecedented period of competition, innovation, and falling prices. The transformative power of the digital age for education, economic growth, healthcare, and entrepreneurship will soon be within our national grasp.

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[12] *See* Multichannel Video Distribution and Data Service Spectrum Auction Closes, *Public Notice*, 19 FCC Rcd. 1834 (2004).

[13] *See* Pew Internet Project Data Memo, *at* http://www.pewinternet.org/reports/pdfs/PIP_Broadband04.DataMemo.pdf (Apr. 2004).

[14] *See* Telecomm. Indus. Ass'n, *TIA's 2004 Telecommunications Market Review and Forecast* 116 (2004) [hereinafter Telecomm. Indus. Ass'n].

[15] *See* Press Release, Gartner says The Number of Hot Spot Users Worldwide to Triple in 2004; Enterprises Must Implement a Wireless Strategy, Analysts to Examine How Companies Manage Wireless Technologies During Upcoming Gartner Wireless and Mobile Summit, March 8-10 in Chicago, *at* http://www4.gartner.com/5_about/press_releases/pr17feb2004.jsp (Feb. 18, 2004); Press Release, Gartner Says Simplistic Focus on Hot Spot Profits Misguided, Rationales for Growth are more Complex, Analysts Project More Than 71,000 Public Wireless LAN Hot Spots in 2003, *at* http://www4.gartner.com/5_about/press_realeases/pr30june2003.jsp (June 30, 2003).

[16] *See* Telecomm. Indus. Ass'n, *supra* note 14, at 117.

[17] Carrier Current Systems, including Broadband over Power Lines Systems, Amendment of Part 15 Regarding New Requirements and Measurement Guidelines for Access Broadband over Power Line Systems, *Notice of Proposed Rulemaking*, 19 FCC Rcd. 3335 (2004).

[18] *See* Rob Pegoraro, *Verizon Wireless Lets You Go Online and Get Out—Quickly*, WASH. POST, Mar. 14, 2004, at F7 (stating that Verizon claims its downloads should average 300 to 500 kbps).